

Please correct the title on line 1 of page 1 as follows:

APPARATUS    METHODS    FOR    CONTROLLING    WAFER  
TEMPERATURE IN CHEMICAL MECHANICAL POLISHING

[0046] FIGURE 2 also depicts the carrier head 66 provided with the thermal energy detector 54 in the form of a thermocouple 92 for directly monitoring the temperature T of the wafer 52. The thermocouple 92 may be configured as a ring 92R surrounding the wafer 52 for sensing the average temperature T of the wafer 52 adjacent to the exposed surface 72. The thermocouple 92 may output the temperature signal 56 to the system controller 58. In situations in which the detector 54 need not be close to or touching the wafer 52 in order to accurately detect the temperature T of the wafer 52, the detector 54 may be mounted in the carrier head 66 slightly spaced from the wafer 52. Such detector 54 may thus detect the temperature of the carrier head 66 adjacent to (very close to) the wafer 52 and thereby provide an accurate indication of the wafer temperature (e.g., a temperature within five degrees of the actual wafer temperature T). The light source 64L for supplying the thermal energy uniformly across the entire wafer area is an example of one embodiment of the present invention.